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NORTH AMERICAN SPECIES OF LEPIOTA.

A. P. MORGAN.

(Continued from p. 159).

III. GRANULOSAE. Dermis of the pileus or at least its outer layer composed of granules, minute warts or furfuraceous particles; the investment of the stipe similar to that of the pileus; the veil of like structure, lacerate and appendiculate.

The species of this tribe are mostly small Agarics growing on the ground in rich soils or on rotted wood. The granules form a loose, easily detached investment. Many species are enumerated.

- a. Lamellae adnate to the stipe.
- 13. LEPIOTA AMIANTHINA Scopoli. Fl. Carn. 1772. Pileus ovoid then campanulate and explanate, subumbonate; the flesh thin, yellowish; the dermis furfuraceous-granulose, ochraceous; the veil lacerate and more or less appendiculate. Stipe subequal, slender, fistulous, scaly below the annulus and colored as the pileus. Lamellae rather broad, close, white be-

Growing on the ground in mountain woods. New York, Peck: Vermont, Morgan. Pileus 2-4 cm. in diameter, the stipe 4-8 cm. long and 2-4 mm. thick.

coming yellowish, adnate; spores elliptic, 5-7 x 4 mic.

14. LEPIOTA RUGOSO-RECTICULATA LORINSER, Oest. Bot. Zeitschr. 1879.

This species is not described further than the statement that it is related to L. amianthina; it differs from it in the surface of the pileus being rugose-reticulate, and in the odor being strong and almost acrid.

Growing in mossy places in woods. New York, Peck.

15. LEPIOTA ADNATIFOLIA PECK, 55 N. Y. REPORT. 1901.

Pileus broadly convex or nearly plane; the flesh thin, white; the dermis minutely granulose or squamulose, varying in color from alutaceous to fulvous; the margin usually appendiculate with the fragments of the veil. Stipe short, thick, solid then stuffed or hollow, glabrous or slightly scaly below the annulus, pallid or rufescent. Lamellae adnate, white; spores 5-6 x 4-5 mic.

Growing on the ground under Pine trees. New York, Peck. Pileus 3-6 cm. in diameter, the stipe 2-4 cm. long and 4-8 mm. thick.

16. LEPIOTA GRANOSA Morgan, Journ. Cin. Soc. N. H. 1883.

Pileus fleshy, ovoid then convex and expanded, subumbonate, more or less irregular and wavy in outline; the flesh thick, whitish or subochraceous, the dermis thick, furfuraceous-granulose, ochraceous to fulvous; the veil of like substance. Stipe tapering upward from a thickened base, fistulous, fibrous-stuffed, whitish or subochraceous above the annulus, below clothed and colored as the pileus. Lamellae rather narrow, close, adnate, tapering outward, whitish or subochraceous; the spores subelliptic, 5 x 3 mic.

Gregarious or subcaespitose; growing on or near rotten stumps and logs in woods. Cincinnati, O.; New York, *Peck*; W. Virginia, *Lloyd*. Pileus 5-9 cm. in diameter, the stipe 5-10 cm. long and 10-15 mm. thick. This is a rare plant with me; I have not seen it for many years.

b. Lamellae free from the stipe or merely reaching it.

17. LEPIOTA CARCHARIAS PERSOON. DISP. FUNG. 1797.

Pileus fleshy, ovoid then campanulate and explanate, umbonate; the flesh thin, white; the dermis granulose, whitish, pinkish to flesh-color; the veil of similar substance and continuous downward with the dermis of the stipe. Stipe tapering upward from a thickened base, fistulous, fibrous-stuffed, below the annulus clothed and colored as the pileus. Lamellae rather broad, close, white, tapering inward and reaching the stipe; spores subelliptic, 3-4 x 2.5-3.0 mic.

Growing on the ground in woods, Dayton, O. Pileus 3-5 cm. in diameter, the stipe 4-5 cm. long and 4-6 mm. thick. The

taste and odor disagreeable according to Persoon.

18. LEPIOTA GRANULOSA BATSCH, EL. FUNG. 1783. Pileus fleshy, ovoid then convex and explanate, subumbonate, often radiately wrinkled; the flesh thin, white, rufescent; the dermis furfuraceous-granulate, ferruginous or fulvous to dark-rufous; the veil similar, lacerate and appendiculate. Stipe more or less elongated, subequal, fistulous, fibrous-stuffed, below the annulus clothed and colored as the pileus. Lamellae rather broad, close, white, rounded behind and slightly adnexed; spores elliptic 4-5 x 3-4 mic.

Growing in open woods and waste places. Atlantic coast states, Schweinitz, Curtis, Peck, etc. Pileus 3-5 cm. in diam-

eter, the stipe 3-7 cm. long and 3-5 mm, thick.

19. LEPIOTA CULTORUM B. & C., N. A. Fungi No. 3. 1853.

Pileus hemispheric, umbonate, the border sometimes repand, clothed with very numerous, brown, granular scales. Stipe short, furfuraceous; the annulus nearly central. Lamellae broad, ven-

tricose, free, remote; spores cymbiform, rather acute at either extremity, about 12 mic. in length.

Growing among pumpkins in cultivated lands. S. Carolina, *Curtis*. Pileus 2-3 cm. in diameter, the stipe 2-3 cm. high and 2 mm. thick.

20. LEPIOTA REPANDA, MASTOCEPHALUS REPANDUS CLEMENTS, BOT. SURVEY NEB. IV. 1896.

Pileus fleshy, convex with a wavy outline, umbonate, the surface covered with minute crowded granular scales, incarnate-ochraceous. Stipe slender, equal, hollow, white above the annulus, below minutely floccose farinaceous and pinkish-ochraceous. Lamellae ventricose, free, white; spores globose or oval, 5-7 x 5 mic.

Growing on rich soil, Nebraska, Clements. Pileus 1-2 cm. in diameter, the stipe 2-3 cm. long and 1-2 mm. thick.

IV. CLYPEOLARIAE. Dermis of the pileus a thin membrane, radiately fibrillose, the cuticle at first continuous but sooner or later broken up and drawn apart by the growth of the pileus, this at length presenting a white-fibrillose surface sprinkled with colored scales; the veil lacerate, part of it appendiculate, continuous downward with the floccose-fibrillose investment of the stipe.

Agarics mostly of small size, comprising altogether many species.

21. LEPIOTA CLYPEOLARIA, AGARICUS CLYPEOLARIUS BULLIARD, HERB. FR. 1788, FRIES. ICONES, SEL. 1867; LEPIOTA CLYPEOLARIA, PECK, 54 N. Y. REP. 1900.

Pileus fleshy, ovoid then campanulate and explanate, subumbonate; the flesh thin, white; the dermis radiately-fibrillose and white or yellowish beneath the cuticle; the cuticle thin, at first continuous and fulvous or rufous, soon broken up except in the center and drawn apart into small scales; the margain appendiculate by fragments of the veil. Stipe tapering upward from a slightly thickened base, fistulous, fibrous-stuffed, fibrousfloccose below the annulus and white or yellowish. Lamellae rather broad, close, free, white or yellowish; spores oblong or subfusiform; 15-20 x 5-7 mic.

Solitary or gregarious; growing in the woods of hilly and mountainous regions. New York, *Peck*. Pileus 3-7 cm. in diameter, the stipe 5-8 cm. long and 3-6 mm. thick. I give the species as figured by Fries and figured and described by the state botanist of New York. I am diposed to think the plant has a limited range, but the name has been widely used and no doubt generally applied to two or three of the following species.

22. LEPIOTA METULISPORA, AGARICUS METULAE-

SPORUS B. & Br., Fungi of Ceylon, 1870.

Pileus fleshy, ovoid then campanulate and explanate, subumbonate; the flesh very thin and fragile, white or yellowish; the dermis radiately fibrillose, at length rimulose-sulcate; the cuticle thin, at first continuous, pale ochraceous to fulvous and rufous, soon lacerate into small scales; the veil lacerate; appendiculate. Stipe slender, hollow, fragile, tapering slightly upward, with a white or yellowish, floccose-fibrillose cuticle below the annulus. Lamellae rather narrow, close, free, white or yellowish; spores oblanceolate, 9-12 x 3-4 mic.

Solitary or gregarious; growing among old leaves in woods. Southern U. S. Common about Preston, O. Pileus 2-4 cm. in diameter, the stipe 5-7 cm. long and 3-5 mm. thick. This seems to be a more delicate and fragile plant than L. clypeolaria; it is considered a "form" of the Ceylon species; it certainly does not strictly agree with the figures or the descriptions of the

Ceylon or English species.

23. LEPIOTA SPANISTA Morgan, sp. nov.

Pileus fleshy, ovoid then campanulate and expanded, subumbonate; the flesh thin, white; the dermis radiately fibrillose, at first continuous, alutaceous to pale umber, the cuticle at length separating into appressed scales; the veil lacerate, appendiculate. Stipe tapering upward from a thickened base, fistulous, fibrous-stuffed, squamulose below the annulus and colored as the pileus. Lamellae rather broad, close, white, approximate; spores elliptic-oblong, 8-11 x 5 mic.

Growing amongst rotten wood in woods. Preston, Ohio. Pileus 3-5 cm. in diameter, the stipe 4-6 cm. in length and 5-8 mm. thick. A plant of firmer texture than L. metulispora. Apparently more closely related to L. helveola Bresadola, Fungi

Tridentini.

24. LEPIOTA SUBLILACEA PECK, Bull. Torr. Club.

1897.

Pileus fleshy, convex, obtuse or umbonate; the flesh thin white; the dermis brownish tinged with lilac, separating into small floccose scales; the veil slight, evanescent. Stipe short, solid, colored as the pileus below the annulus. Lamellae rather broad, subdistant, free, whitish; the spores elliptic, 10 x 5 mic. uniguttulate.

Growing on bare ground in pastures. Kansas, *Bartholomew*. Pileus 1-2.5 cm. in diameter, the stipe 1-2.5 cm. long and 2-4 mm. thick. This plant appears to have some resemblance to L.

lilacea Bresadola.

25. LEPIOTA FLORALIS B. & RAV., N. A. FUNGI No. 1853.

Pileus fleshy, convex then explanate; the flesh very thin, white: the dermis radiately fibrillose and striate around the mar-

gin; the cuticle separated into brownish, floccose scales. Stipe slender, attenuated downwards, brown like the pileus; the annulus persistent about the middle of the stipe. Lamellae broad, distant, ventricose, free; the spores about 10 mic. long.

Gregarious; growing on rich soil in gardens. S. Carolina, Ravenel. Pileus 1-2 cm. in diameter, the stipe 2-2.5 cm. in length and not I mm. thick. It is desirable that the species be identified

and better described.

26. LEPIOTA UMBROSA Morgan, sp. nov.

Pileus fleshy, ovoid then campanulate and expanded, subumbonate; the flesh thin, white; the dermis radiately fibrillose, white beneath the cuticle, cuticle tawny-brown, darker in the center, at maturity slightly parted into minute scales, the fibers on the umbo often acutely convergent; the veil flocculose, partly appendiculate. Stipe subequal above the mycelial bulb, fistulous, fibrous-stuffed, white and smooth above the annulus. below floccose-fibrillose and rufescent, with scattered tawny scales. Lamellae rather narrow, close, white, rounded behind, free, approximate; spores elliptic-oblong, obliquely apiculate, 5-6 x 3 mic.

Growing on the ground in woods, Preston, Ohio. 1.5-2.5 cm. in diameter, the stipe 4-5 cm. long and 2-4 mm. thick.

27. LEPIOTA GRACILIS PECK, BULL. TORR. CLUB. 1900.

Pileus fleshy, ovoid then convex and expanded, subumbonate, the flesh thin, white; the dermis white beneath the brown or blackish cuticle, which is soon broken up and drawn apart into small scales. Stipe long, slender fibrillose-floccose, brown or blackish; the annulus membranaceous, persistent, blackish on the under side. Lamellae close, ventricose, free whitish; the spores broadly elliptical, 6-7 x 4 mic.

Growing in rich soil in woods, Canada, Dearness. 6-10 mm. in diameter, the stipe 2-3 cm. long and about 1 mm.

thick.

LEPIOTA FELINA PERSOON, SYNOPSIS 1801; COOKE.

ILLUSTRATIONS. Pl. 943.

Pileus fleshy, ovoid then campanulate and explanate, subumbonate: the flesh thin, white: the dermis radiately fibrillose. white beneath the black cuticle; the cuticle at first continuous soon broken up and drawn apart into small scales. Stipe tapering upward from a clavate base, fistulous, the cuticle whitish above, blackened and scaly below; the annulus thin membranaceous, deciduous. Lamellae rather narrow, close, free, white: spores elliptic-ovoid, 6-8 x 4-5 mic.

Growing on the ground in woods. New York, Peck; Wisconsin, Denniston; Preston, O. Pileus 3-5 cm. in diameter; the stipe 5-8 cm. long, 2-3 mm. thick at apex, 3-6 mm. at the base. V. ASPERAE. Dermis of the pileus or at least its superficial layer fibrillose-scaly from the first, the scales reflexed and squarrose or the fibres fasciculate and convergent into pointed warts; the veil and the cuticule of the stipe may be of similar texture or the stipe may be nearly glabrous.

A tribe of many species among which are some of rather large size.

29. LEPIOTA ASPERA, AMANITA ASPERA PERSOON, SYNOPSIS, 1801. AGARICUS ACUTESQUAMOSUS Weinman, Sylloge I. 70. Stevenson, Br. Fungi I. 16. Cooke Illust. Pl. 14.

Pileus fleshy, hemispherical, then expanded and convex, obtuse; the flesh moderately thick, white; the dermis appressedly tomentose, pale ferruginous, sprinkled with minute, sharp-pointed, brownish, easily separating warts; veil large, membranaceous, persistent, adherent in places to the margin of the pileus and annulate upon the stipe. Stipe tapering upward from a bulbous base, thick, fistulous, fibrous-stuffed, white above the annulus, below fibrillose-scaly and ferruginous. Lamellae rather narrow, closely crowded, white, tapering inward, free, approximate; spores 6-10 x 2-3 mic.

Pileus 10-15 cm. in diameter; the stipe 8-12 cm. in length, 8-12 mm. thick at the apex, 18-25 mm. at the bulbous base. This plant and Lepiota Friesii are considered by Fries to be varieties of a single species. In Europe they grow in grassy grounds and gardens. In this country the plants reported under the name Lepiota acutesquamosa undoubtedly belong to several different species.

30 LEPIOTA ASPRATA Berkeley. Hoooker's Journal, 1847. Lepiota echinodermata Cke. & Mass. Grevillea XVI. 30.

Pileus fleshy, convex then explanate; the flesh thin, white, the dermis a dense fibrillose-floccose layer, the fibers convergent into erect, conic warts, pale yellow to orange in color, the veil lacerate, appendiculate. Stipe slender, nearly equal, floccose-scaly below the annulus and colored as the pileus. Lamellae close, ventricose, white, slightly adnexed; spores sub-elliptic 8-10 x 6 mic.

Growing on the ground and on rotten wood. S. Carolina, Curtis; Alabama, Atkinson. Pileus 2-4 cm. in diameter, the stipe 4-5 cm. long and 3-4 mm. thick. Fries in the Novae Symbolae and also in the Hym. Eur. identifies this species with Pholiota muricata Fr.

31. LEPIOTA HEMISCLERA B. & C. Fungi Cub. 1867. Pileus fleshy, ovoid then convex and explanate; the flesh thin, white; the dermis a dense fibrous coat, alutaceous to umber, the ends of the fibers curling up and convergent into small pointed warts; the veil ample, irregularly lacerate, continuous downward with the fibrillose cuticle of the stipe. Stipe fistulous,

fibrous-stuffed, white above the irregular annulus, below whitefibrillose, with or without some colored scales, arising from a bulbous base; the bulb depressed and marginate. Lamellae narrow, closely crowded, white, some of them forked, obtuse behind and tapering outward, free; spores obtuse or truncate at one end, pointed at the other, 5-8 x 3 mic.

Growing about old stumps and the base of trees in woods. Cuba. Wright; Preston, O. Pileus 5-9 cm. in diameter, the stipe 5-10 cm. long and 6-10 mm. thick above the marginate

bulb.

32. LEPIOTA ASPERULA ATKINSON, MUSHROOMS. 1901. LEPIOTA ERIOPHORA PECK. BULL. TORR. CLUB.

Pileus fleshy, convex then expanded and explanate; the flesh thin, white; the dermis a thick fibrous coat, alutaceous to umber, at first densely scaly, the scales at length erected into pointed warts; the veil lacerate; appendiculate. Stipe subequal above the bulbous base, fistulous, fibrous-stuffed, below the annulus floccose-fibrillose and colored as the pileus. Lamellae rather narrow, white, tapering inward, free; spores oblong, obliquely apiculate, 3-5 x 2-3 mic.

Growing in rich soil in woods. New York, Atkinson; W. Virginia, Lloyd; Preston, O. Pileus 3-5 cm. in diameter, the stipe 4-6 cm. long and 3-5 mm. thick. The bulb at the base seems larger on account of the adherent soil and mycelium. I have heretofore called this species Lepiota hispida Lasch.

LEPIOTA FUSCOSQUAMEA PECK, 26 N. Y. RE-

PORT 1873 AND 35 N. Y. REPORT.

Pileus fleshy, hemispherical or convex subumbonate; the flesh thin, white; the dermis consisting of numerous, substrigose, erect or reflexed, blackish-brown scales; the veil slight, evanescent. Stipe short, equal above the bulbous base, fistulous, fibrous-stuffed, floccose-fibrillose and colored as the pileus. Lamellae close, free, white; the spores elliptic-oblong, 6-8 x 3-4 mic.

Growing in Pine and Hemlock woods. New York, Peck. Pileus 4-6 cm. in diameter, the stipe 5-7 cm. long and 6-8 mm.

thick. A rare plant!

34. LEPĪOTA ACERINA PECK. 51 N. Y. REP. Pileus subglobose, then convex and expanded; the flesh thin, white: the dermis at first a thin, dense, fibrous coat, tawny, darker in the center, separating at length into fibrillose scales; the veil lacerate appendiculate. Stipe short fibrous-stuffed, fibrillose-scaly, rufescent, the base bulbous. Lamellae rather broad, white, obtuse behind, approximate; spores pointed at one end, obtuse or truncate at the other, 8-10 x 3-4 mic.

Growing on rotten wood in woods. New York, Peck, Preston, O. Pileus 1.5-2.5 cm. in diameter, the stipe 2-4 cm. long and 2-4 mm, thick. Apparently much resembling L. Boudieri

Bres., especially as to the spores.

35. LEPIOTA GEMMATA Morgan, sp. nov.

Pileus fleshy, at first globose then convex and expanded; the flesh thick, white; the dermis rather thick, white, its surface from the first divided up into minute, erect, pointed warts, which grow dusky with age; the veil appendiculate. Stipe tapering upward, fistulous, fibrous-stuffed, white, flocculose-scaly up to the annulus, the scales becoming dusky. Lamellae broad, close white, inwardly obtuse and approximate; spores oblong, obliquely apiculate, 4-6 x 2.5-3.0 mic.

Growing in rich soil or rotten wood. Preston, O. Pileus 2-4 cm. in diameter, the stipe 3-5 cm. long, and 3-5 mm. thick. Before the expansion of the pileus it looks like a young Lycoperdon gemmatum. After maturity the superficial pointed warts sometimes disappear leaving the surface pulverulent.

VI. GLIODERMATA. Dermis of the pileus continuous, never separating into scales, but the surface invested by a more or less thickened layer of gluten, pellucid or colored. Stipe commonly dry and squamulose or subglabrous, in a few species with a viscid cuticle like the pileus.

36. LEPIOTA CANDIDA Morgan Sp. nov.

Pileus fleshy, ovoid then convex and explanate, subumbonate; the flesh thin, white; the dermis radiately fibrillose, smooth, pure white, covered by a very thin viscous epidermal layer, at first continuous, but with the growth of the pileus drawn apart and left as minute scales upon the surface. Stipe long, tapering upward from a clavate base, fistulous, silky-fibrillose or quite smooth, pure white; the annulus thin, membranaceous, persistent. Lamellae narrow, close, free and rather remote, pure white; spores elliptic-oblong, obliquely apiculate, 5-7 x 3-4 mic.

Growing on the ground among old leaves in woods. Preston, O. Pileus 1-3 cm. in diameter; the stipe 5-7 cm. long, 5-6 mm. thick at the base, tapering to 2-3 mm. at the apex. The surface of the pileus sticks to the fingers and to the paper in

which it is folded.

37. LEPIOTA DELICATA FRIES. SYST. MYC. I, 1821.

ICONES SEL. TAB. 15. COOKE, ILLUST. PL. 118.

Pileus fleshy, globose, then convex and explanate; the flesh thin white; the dermis smooth and glabrous, yellowish or rufescent, furnished with a viscid cuticle. Stipe tapering slightly upward, fistulous, fibrous-stuffed, white above the annulus, below densely floccose and colored as the pileus, the annulus membranaceous. Lamellae broad, close, white, free, approximate, spores ———.

Growing on the ground in woods. N. Carolina, Schweinitz. Pileus 2-3 cm. in diameter, the stipe 2-3 cm. high and 3-5 mm. thick,

38. LEPIOTA OBLITA PECK. 26 N. Y. REP. 1873 AND

Pileus fleshy, convex and expanded, subumbonate; smooth or obscurely spotted or scaly, viscid, alutaceous inclining to tawny, the umbo generally darker. Stipe equal or slightly tapering upward, smooth at the top, floccose and viscid elsewhere, fistulous, fibrous-stuffed. Lamellae crowded, free, whitish or yellowish, some of them forked; spores elliptic 5-6 x 3-4 mic.

Growing in frondose woods. New York, Peck. Pileus 5-7 cm. in diameter, the stipe 5-7 cm. long and about 6 mm. thick.

39. LEPIOTA GLISCHRA Morgan sp. nov. Agaricus OBLITUS MORGAN, MYC. FLORA M. V.

Pileus fleshy, subovoid then convex and expanded; the flesh rather thin, white; the epidermis a thin layer of brown gluten, thickest at the center rendering it darker colored; this glutinous layer continuous with the marginal veil and running down and enveloping the stipe. Stipe tapering upward, solid, whitishfibrillose beneath the brown gluten. Lamellae broad, close, white, rounded behind, free, approximate; spores globose or ovoid, apiculate, $4-5 \times 4$ mic.

Growing in rich soil in woods. Preston, O. Pileus 3-4 cm. in diameter, the stipe 4-6 cm. long and 3-4 mm. thick.

40. LEPIOTA FULVODISCA PECK. BULL TORR. CLUB. 1895.

Pileus thin, convex or nearly plane, obtuse or umbonate, viscid, white, the umbo fulvous. Stipe slender, flexuous, viscid, hollow, white or whitish, abruptly bulbous at the base; the annulus thin, membranaceous, white. Lamellae narrow, close, free, white: spores elliptic-ovoid, 8-10 x 4-5 mic. uniguttulate.

Growing on the ground among old leaves in woods. California, M. Clatchie. Pileus 2-4 cm. in diameter, the stipe 5-8 cm, long and 2-3 mm, thick.

41. LEPIOTA ILLINITA FRIES, OBS. Myc. II. 1818. Icones Sel. Tab. 16.

Pileus fleshy, ovoid then campanulate and expanded subumbonate; the white pileus invested by a thick glutinous layer, pellucid or scarcely colored, which is at first continuous downward upon the stipe. Stipe slender, equal, fistulous, fibrous-stuffed. white beneath the glutinous cuticle. Lamellae broad, close, free, white; spores broadly elliptic, $5-6 \times 4$ mic.

Growing on the ground in grassy woods and fields. New York, Peck; Vermont, Morgan; Pacific Coast. Pileus 4-7 cm.

in diameter, the stipe 5-8 cm. long and 4-6 mm. thick.

(To be continued.)